EVALUATION OF A TRANSFORMATIONAL CHANGE EFFORT:

"FIRE SAFE, CALIFORNIA"

STRATEGIC MANAGEMENT OF CHANGE

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ABSTRACT

California faces a wildfire problem of unprecedented magnitude, as demonstrated by the fact that more than half the homes destroyed by wildfire in the state's entire history have been destroyed since 1990. The reactive approaches of the past to fire prevention and fire suppression have not adequately mitigated this growing problem. With this in mind, the California Department of Forestry and Fire Protection (CDF) initiated a major organizational change in 1993 to address the state's wildfire problem. The change was enacted as the "Fire Safe, California" program, an intergovernmental, public/private collaboration devoted to shifting the emphasis of the state's wildfire protection system from reactive response to proactive "prefire management."

The purpose of this research is to develop a methodology for conducting a five-year performance evaluation of "Fire Safe, California" using various techniques adapted from the private sector, and applying them to the Change Management Model (CMM) presented in the "Strategic Management of Change" course at the National Fire Academy. The evaluative research methodology was used to analyze change management literature, communicate salient findings to change leaders, assess the program's strengths and weaknesses, and propose organizational "next-step" strategies.

The following research questions were posed:

What are the key factors identified in the literature that should be evaluated to determine whether or not a change management effort is succeeding?

How can these factors be evaluated for the "Fire Safe, California" program?

Can any of the models described in the literature be adapted to the task of conducting a performance evaluation of the "Fire Safe, California" program?

1. After five years, can it be determined which aspects of this change management effort are working well, and where improvements are needed?

The change management literature was reviewed in order to identify common elements from a variety of models for evaluating change efforts. The author developed an

interview format based on the CMM and on change factors gleaned from the literature review, and conducted personal interviews with key change leaders who have been involved in implementation of the “Fire Safe, California” program. They rated the program’s effectiveness for each of seven key change evaluation factors. Results of these ratings were used to develop an eight step program evaluation process.

The author used the findings from the literature review and interviews to develop preliminary recommendations for altering the program’s change management approach. These were discussed with the top level executives of the author’s organization (CDF), resulting in further modifications and final recommendations for modifying and institutionalizing the change effort, as prescribed by Phase IV of the CMM. Final recommendations included “next step” strategies for developing a program marketing approach timed to coincide with times of wildfire crisis, overcoming internal resistance to change, and developing credible methods for quantifying improvements.

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INTRODUCTION

California has perhaps the most severe wildfire problem on earth due primarily to four factors: weather, terrain, vegetation fuels, and people. Weather and terrain can be considered “constants” in that they have not changed appreciably in the past 150 years. California’s naturally steep and variable topography, and its annual six-month rainless season, have combined over thousands of years to create vegetation ecosystems that are not only fire-prone, but in many cases, fire-dependent. With the influx of 32 million people since 1850, the natural role of fire has been removed from the California landscape, allowing vegetation fuels to build to conflagration potential in many parts of the state. As more and more people came to California, communities extended their boundaries into surrounding areas of rugged topography and increasing fire hazard. This trend has accelerated in the last 20 years as the state’s population has grown by more than 8 million. Much of this recent residential development has occurred in areas that are extremely vulnerable to wildfire. And yet, during this same period, fire department budgets have largely stagnated since property taxes were capped in 1978 with the passage of Proposition 13, a statewide voters’ initiative.

The convergence of many of these factors in the past several years has led to a wildfire problem of unprecedented magnitude, as demonstrated by the fact that more than half the homes destroyed by wildfire in California’s entire history have been destroyed since 1990. Past approaches to fire prevention and fire suppression have not adequately mitigated this growing problem, and in the face of diminishing public resources it has become clear that what is needed is a new way of thinking and communicating about California’s wildfire problem—what some might call a new wildfire paradigm (Cole, 1997a).

With this in mind, the California Department of Forestry and Fire Protection (CDF) initiated a major organizational change in 1993 to address the state’s wildfire problem. The

change was enacted as the “Fire Safe, California” program, an intergovernmental, public/private collaboration devoted to shifting the emphasis of the state’s wildfire protection system from reactive response to proactive prefire management (California Board of Forestry,1996).

The purpose of this research is to develop a methodology for conducting a five-year performance evaluation of “Fire Safe, California” using various techniques adapted from the private sector, and applying them to the Change Management Model (CMM) presented in the “Strategic Management of Change” course at the National Fire Academy (Figure 1).

Figure 1. Overview of the Change Management Model (Federal Emergency Management Agency [FEMA], 1996, p. SM C-2)

The evaluative research methodology was used to analyze change management literature, communicate salient findings to change leaders, assess the program's strengths and weaknesses, and propose organizational "next-step" strategies.

The following research questions were posed:

What are the key factors identified in the literature that should be evaluated to determine whether or not a change management effort is succeeding?

How can these factors be evaluated for the "Fire Safe, California" program?

Can any of the models described in the literature be adapted to the task of conducting a performance evaluation of the "Fire Safe, California" program?

2. After five years, can it be determined which aspects of this change management effort are working well, and where improvements are needed?

BACKGROUND AND SIGNIFICANCE

The "Fire Safe, California" program was initiated by CDF to address the state's exploding wildfire problem. "Fire Safe, California" originated as a fire prevention education program and was based on the recognition that wildfires do not "respect" jurisdictional boundaries; they do not "care" which fire department is responding, or whether a home is adequately insured or properly sited.

During the program's initial analysis and planning phases (Phases I and II in Figure 1), this recognition led to the development of two major innovations that, taken together, constitute a transformational change in the state's wildfire protection system. The first of these innovations was the creation of a strategic alliance in 1993: the California Fire Safe Council, a coalition of private and public entities with vested interests in fire prevention. This statewide council, which meets 10 times per year, unites the fire protection community with leaders of industry organizations and associations representing construction and development, insurance, real estate, utility, landscaping, agriculture, and environmental interests. The purpose of the council is to act as a guiding coalition for reducing wildfire

costs and losses in California. While educating each other and their respective constituents, the council also has successfully supported key fire safety legislation. Perhaps most important, it has spawned more than a dozen local fire safe councils, which are linked through a website (http://www.firesafecouncil.org). These local councils are particularly important for implementing the second key innovation, the California Prefire Initiative (California Board of Forestry, 1996).

The California Prefire Initiative is a proactive approach to reducing wildfire costs and losses that focuses on taking action *before* fires occur. “Prefire management” consists of a public problem-solving process in which local fire safe councils sponsor community forums for the purpose of exploring fire protection scenarios and alternatives using geographic information systems (GIS), integrated spatial databases, fire behavior modeling, high speed portable workstations and large screen displays. Career fire personnel (“prefire engineers”) use these tools to explain and pictorially display enormous amounts of spatial data on local fire history, hazardous fuel conditions, severe fire weather patterns, and values at risk. Wildfire risks and potential solutions are then assessed in these community settings, and prefire management projects are designed based on location-specific public concerns. These projects may vary from vegetation fuel treatments using prescribed burning, to targeted utility line inspections, to elementary school “playing with matches” educational programs, depending on the local community’s needs. Projects are then prioritized for implementation based on community determination of the most cost effective prefire management investments for reducing taxpayer costs and citizen losses from wildfire (Cole, 1997b).

As the implementation phase (Phase III of Figure 1) of this change management effort has proceeded, there is a growing consensus among change leaders that this multi-dimensional partnership approach seems to be more effective than previous efforts for dealing with California’s extremely complex wildfire problem (see “Discussion” section). However, no methodology existed for evaluating the program’s effectiveness,

institutionalizing its successes, and modifying its weaknesses as prescribed by Phase IV of the CMM. Prior to this research paper, the “Fire Safe, California” program had been concerned almost exclusively with only the first three phases of the CMM. The intent of this research paper is to address the requirements of Phase IV by performing a systematic implementation evaluation of the program and determining appropriate modifications to the initial change management approach. Completion of Phase IV will provide change leaders with information necessary to demonstrate long-term organizational commitment to institutionalizing the change implementation.

LITERATURE REVIEW

The literature review begins with a very brief background on the California wildfire problem, then reviews recent literature on the concept of transformational change. For the latter term, the author uses the definition for transformational change taught by the National Fire Academy: “a radical reconceptualization of the very character or nature of an organization” (FEMA, 1996, pp. SM2-5, SM A-9). For this research paper, *transformational change* is considered roughly equivalent to the following terms, each of which is discussed later in this literature review: *paradigm shift* as used by Kuhn (1970); *reinvention* as used by Osborne and Gaebler (1992); and *reengineering* as used by Hammer & Champy (1993).

California and Wildfire

Bruegman (1994, p. 34) describes something called the *boiled frog phenomenon*. He asks the reader to imagine taking a frog from its habitat in a stream or a pond and placing it in a pan of heated water. Naturally, it will immediately sense a perilous shift in its environmental paradigm, and will jump out and survive. But place that frog in a pan of ambient pond water, then slowly heat the water very gradually, and the frog will stay in the pan until it boils to death. In some ways this phenomenon describes the evolution of the

California wildfire problem during the 20th century. As the state's population has grown and its wildlands have urbanized, the changes in vegetation, settlement patterns, and fire behavior occurred so gradually that few recognized how serious the problem had become until the state's wildfire protection system began to experience overwhelming fire events. Today, fires that are not significantly larger or hotter than fires in the past are capable of causing destruction of unprecedented magnitude (Cole, 1997a). And no matter how much is spent on the fire suppression and fire prevention methods of the past, the pot seems to boil over with increasing frequency.

The first to describe this problem was Carl C. Wilson (1971, p. 43) who wrote, "The potential for disaster is growing faster than our ability to cope with it." He was writing in response to the California conflagrations of 1970, which destroyed 722 homes and killed 13 people. Another fire researcher, Clay P. Butler (1976), was inspired by this same conflagration to provide the first generic analysis of structure loss on wildland fires, and even coined a term for the problem—the *urban-wildland interface*.

Neither Wilson nor Butler, however, anticipated the magnitude that this problem would assume in California during the last decade of the 20th century. Wilson's quote about the problem outstripping abilities is even more true today, as evidenced by increasing firefighting costs and citizen losses (California Board of Forestry, 1996).
This suggests that an incremental, transitional response has failed to adequately mitigate the wildfire problem in California. CDF and others have concluded that what may be required is nothing less than a transformational change, or "paradigm shift" to a more proactive approach to the California wildfire problem (Foote and Cole, 1993).

Transformational Change

The historian Thomas Kuhn (1970) defined a paradigm as a set of assumptions about reality—an accepted model or pattern—that explains the world better than any other set of assumptions. It could be as all-encompassing as the capitalistic economic model, or as specific as the notion that the best way for a society to deal with unwanted fires is to create fire departments almost exclusively to respond to fires after they have been ignited. Bruegman (1994) and others have suggested that the fire service in North America may be stuck in an outdated "reactive paradigm."

Evidence in support of this view is provided by FEMA (1997), which reports that the U.S. has one of the highest fire loss rates in the industrialized world, both in terms of fire deaths and dollar loss. These statistics are perplexing in light of the fact that the U.S. is the international leader in many areas of health and safety, including food and drug standards, consumer products testing, and automobile safety. For such a safety conscious and technologically advanced society to be a leader in fire losses seems a monumental paradox. Yet the fire death and loss trends in the U.S. remain extraordinarily high even though our fire department response times and fire suppression performance are among the best in the world. After looking at many factors in other nations with lower fire death rates, the study concluded that U.S. fire death rates and losses are "a function of the level of resources devoted to fire suppression versus fire prevention" (p. 11). Schaenman (1993) reports that countries with lower fire death rates spend much more on fire prevention activities and dedicate more of their firefighters' time to these activities, leading FEMA (1997, p. 11) to conclude that "prevention is more effective than suppression in saving lives."

In their book *Reinventing Government*, Osborne and Gaebler (1992, p. 223) criticize America's fire departments as perhaps the worst example of "reactive government." They use this example to propose a paradigm shift to a model they call "anticipatory government." While this model was not intentionally used by CDF in

developing the “Fire Safe, California” program, many of the factors identified by Osborne and Gaebler (1992) have proven fundamental to the program’s effort to effect transformational change by shifting emphasis from the traditional fire service *reactive* paradigm to a broader coalition approach to *proactive* prefire management.

For example, the first of eight factors Osborne and Gaebler (1992, p. 326) identify as supportive of transformational change is *crisis*: “The most common form it takes in government is fiscal crisis,” they write, “but economic crises, political crises, and even natural crises can create demands for change.” Indeed, the crisis conditions provided by California’s record of unprecedented wildfire conflagrations in recent years (Cole et al., 1993) have been a major impetus to the transformational change efforts of “Fire Safe, California.”

The private sector has been wrestling with this idea of transformational change for several years now, especially with the emergence of the Internet, satellite communications, and the global economy. These factors led one writer to observe that “the pace of change has accelerated beyond the capability of most organizations to respond” (Ashkenas et al.,1995, p. 99), words remarkably similar to those written a quarter of a century earlier by Wilson (1971) in describing California’s potential for wildfire disaster. Many in the private sector have had to literally “transform” the way they do business in order to survive. These change efforts are known by many terms: total quality management, reengineering, reinvention, right sizing, restructuring, and turnaround, to name a few. But in almost every case, the basic goal has been to make fundamental changes in how business is conducted in order to help cope with new, more challenging global market environments (Kotter, 1995).

The popular book *Reengineering the Corporation* (Hammer & Champy, 1993) offers a good illustration of how some of the transformational change management principles developed for the private sector might be adapted to “Fire Safe, California.” Hammer and Champy (1993, p. 49) state that reengineering “is about inventing new

approaches to process structures that bear little or no resemblance to those of past eras." According to the authors, a *process structure* is "a collection of activities that takes on one or more kinds of input and creates an output that is of value to the customer" (Hammer & Champy, 1993, p. 35). By this definition, a process structure for the governance of public wildfire safety services might include activities that take *inputs* in the form of tax revenues and insurance premiums, for example, and create *outputs* in the form of reduced firefighting costs and citizen losses from wildfire. As such, the "Fire Safe, California" program can be considered an example of public reengineering in that it entails newly invented "approaches to process structures that bear little resemblance to those of past eras" (Hammer & Champy, 1993, p. 49).

A number of formulaic methodologies for managing transformational change have appeared in the literature in recent years (e.g., see: Osborne & Gaebler,1992; Duck, 1993; Hall et al., 1993; Hammer & Champy, 1993; Carr, 1994; Chang, 1994; Reynierse, 1994; Troy, 1994; and Kotter, 1995). Seven of these models were identified by the author as having promise for helping to develop a performance evaluation methodology for "Fire Safe, California." These are summarized in Appendix A.

While there is a great degree of variability among these models, they are all mechanistic approaches that attempt to identify a finite number (5-10) of key factors for managing transformational change. In the CMM (FEMA, 1996), these key factors are referred to as change strategies, change methods, or change objects (an example of the latter would be an organization's culture). Regardless of what these factors are called by the various authors, one thing they all have in common is that they are "key drivers of behavior" (Hall et al., 1993, p.123) that must be completely transformed in order to successfully shift from an existing paradigm to a new one.

Finally, it should be noted that the author has used these methodologies as guidance for identifying key factors to be evaluated for one specific transformational change—the "Fire Safe, California" program. These same change factors may or may not

apply to a different change effort. In any case, what is more important than specific factors is how they work together to implement the desired change. As Duck (1993, p. 109) observes, this type of mechanistic approach has long been used to analyze and manage physical work such as assembly line manufacturing, but “with change,” Duck writes, “the task is to manage the dynamic, not the pieces.”

PROCEDURES

The research for this paper was conducted within the context of the Change Management Model (CMM) presented for the “Strategic Management of Change” course at the National Fire Academy. Specifically, the evaluation/institutionalism phase (the final phase of this four-phase model) was used as a guide for developing a five-year performance evaluation for the “Fire Safe, California” program. This phase of the CMM consists of three tasks (FEMA, 1996):

Evaluate initial change implementation.

3. Alter/modify change management approach.
4. Continue to monitor and institutionalize change implementation.

To begin to address the first task, a literature review was conducted to survey a range of existing models for evaluating change efforts. The initial literature review was conducted at the Learning Resource Center of the National Emergency Training Center in July and August of 1997. Additional literature review was conducted between August and December of 1997 using the Internet and the author’s own personal library.

The change management literature was scrutinized in order to identify common elements from a variety of models for evaluating change efforts (see Appendix A for summary). Since most of these models were developed in the private sector, they were analyzed for applicability to the change management requirements of the California wildfire problem, which must be addressed by the public sector (e.g., fire departments, land use planners) as well as the private sector (e.g., private property owners, insurers).

The author developed an interview format based on the National Fire Academy's CMM. The interview also presented a categorical listing of factors gleaned from the literature review and asked respondents to rate the program's effectiveness in several areas (see interview outline, Appendix B). Personal interviews were conducted with key change leaders who have been involved in implementation of the "Fire Safe, California" program, including fire executives from local, state, and federal fire agencies, private citizens active in a local fire safe councils (including one who lost his home to wildfire in 1993), and representatives from the insurance and real estate industries. A total of eight people were interviewed and each interview lasted between 30 and 60 minutes.

To address the second and third tasks of the evaluation/institutionalism phase of the CMM, the author used the findings from the literature review and interviews to develop preliminary recommendations for altering the program's change management approach. These were discussed with the top level executives of the author's organization (CDF), resulting in further modifications and final recommendations, which are presented later in this paper.

Limitations

Of the seven methodologies summarized in Appendix A, all but the one developed by Osborne and Gaebler (1992) were designed for use in the private sector. This required a certain amount of "translation" on the part of the author to determine applicability of certain concepts and terminology to the "Fire Safe, California" program. For example, the literature contains references to evaluative factors aimed at *corporate strategies* (Troy, 1994), *customer needs* and *market trends* (Hall et al., 1993). The author feels confident that *corporate* strategies can safely be considered equivalent to *organizational* strategies, and the concept is therefore applicable to public as well as private scenarios. But the use of evaluative factors aimed at customers and markets may not be so straightforward. Mintzberg (1996), for example, takes issue with "customer-driven government," a concept

promoted by Osborne and Gaebler (1992). He points out that government provides services, not goods, so citizens should not be regarded as customers. Citizens who become unhappy with their treatment at the hands of the IRS, for example, do not have the market option to “take their business elsewhere.” This limitation cautions against making blanket assumptions that change management techniques developed for the private sector will also be applicable in the public sector.

A second limitation to note is that the relatively small number of interviews preclude any statistical analysis. However, given the high level of expertise of this change leader group, and their experience with implementation of this program, the author is confident that the quality of their input provides an excellent basis for evaluating “Fire Safe, California.”

Definition of Some Selected Terms

CDF: California Department of Forestry and Fire Protection.

Change leader: Person with sufficient influence to motivate, implement and analyze the overall transformation effort.

CMM: Change Management Model (FEMA, 1996, p. SM 2-3)

GIS: Geographic Information System.

GPS: Global Positioning System.

Paradigm shift: (see *transformational change*)

Reengineering: (see *transformational change*)

Reinvention: (see *transformational change*)

Transformational change: a radical reconceptualization of the very character or nature of an organization or approach. (See “Literature Review” for discussion of equivalency to *paradigm shift*, *reengineering*, and *reinvention*).

RESULTS

The results of the research project are organized around the four specific questions that were posed at the outset. In this section each is addressed in turn.

What are the key factors identified in the literature that can be evaluated to determine whether or not a change management effort is succeeding?

The CMM calls for evaluating objects of change (e.g., an organization's culture), management methods, and organizational strategies (FEMA, 1996, p. SM 2-18). The literature review yielded numerous factors in each of these categories for evaluating organizational change and transformation efforts.

A total of 56 factors for evaluating effectiveness of change efforts were identified from the change management literature (see Appendix A for summary). There were many similarities noted among the models and a number of overlapping or redundant issues. For example, every model mentioned leadership and most mentioned vision. The author was able to condense the 56 factors into seven evaluation categories. These categories are listed in Table 1 in rank order, according to frequency of mention in the reviewed literature.

Table 1: Factors for Evaluating Effectiveness of Change in Rank Order (based on frequency of appearance in the literature)

CHANGE EFFECTIVENESS FACTORS	
1	Leadership
2	Vision
3	Empowerment of Others
4	Pilot Projects
5	Communication
6	Institutionalization
7	Sense of Urgency

While these results may reflect trends in the change management literature over the past five years, it must be remembered that the sources are overwhelmingly oriented to business applications. To evaluate whether they can be adapted beyond the private sector, we proceed to the second research question.

How can these factors be evaluated for the "Fire Safe, California" program?

During the interview process, it became abundantly clear that while it is a relatively easy matter to identify *what* factors are important to evaluate in a change management effort, it is far from clear *how* to apply them to the evaluation phase of the CMM. For example, the interviewees were in near-unanimous agreement with the literature that *leadership* and *vision* were the most important factors to evaluate for "Fire Safe, California," but there was little agreement on how to measure the effectiveness of either. As one fire chief put it, "Maybe it's enough just to recognize that we are stopping some fires today that we wouldn't have stopped five years ago" due to prefire management projects that have been implemented through the program. This reasoning seems to suggest that "since we've accomplished our objectives, our leadership and vision *must* be effective."

This kind of circular logic goes to the heart of what Osborne and Gaebler (1992, p. 349) call "the art of performance measurement," and led the author to decide not to try to evaluate the factors on an absolute scale, but rather to take an indirect, two-step approach. In the first step, change leaders were asked to rate the program's effectiveness for each factor. So, for example, they were not asked "How good is the program's leadership on a scale of 1 to 10?" Rather, they were asked to rate the program's leadership relative to the other six factors. The results of this poll are displayed in Table 2.

Table 2: "Fire Safe, California" Effectiveness Rating
(based on change leader interviews)

"Rate the program for for relative effectiveness in each of the following areas."	
1	Pilot Projects
2	Empowerment of Others
3	Vision
4	Leadership
5	Sense of Urgency
6	Institutionalization
7	Communication

The second step was to get change leaders to discuss the program's relative strengths and weaknesses in the context of the identified change factors. So, for example, if an interviewee rated communication effectiveness relatively low, they were asked to suggest "alterations or modifications" to improve the program's communication approach, addressing the second task of Phase IV of the CMM (FEMA, 1996, p. SM C-14). Finally, after having an opportunity to discuss these relative strengths and weaknesses, change leaders were asked to grade the program's effectiveness for each of the seven change factors (see Appendix B for grading instructions).

This rating and modification of the seven factors by the program's change leaders provided a basis for developing a *process structure* (Hammer & Champy, 1993) for evaluating the program. Before fine-tuning the process, however, we turn once more to the literature and the third research question.

Can any of the methodologies described in the literature be adapted to the task of conducting a five-year performance evaluation of the "Fire Safe, California" program?

Of the seven models outlined in Appendix A, only the one presented by Kotter (1995) contains all of the change effectiveness factors identified in Tables 1 and 2. This suggested that Kotter's model is a non-statistical "best fit;" that is, the approach that best encompasses the overall findings from the literature.

Kotter is a professor at the Harvard Business School who has studied more than 100 companies that have attempted major reengineering or transformation efforts. "The most general lesson to be learned from the more successful cases," he writes, "is that the change process goes through a series of phases" (Kotter, 1995, p. 59). He goes on to identify eight key phases of change, any of which can become a "reason for failure" if not effectively implemented. Further analysis by the author confirmed that each of these eight steps either describes, or can be easily adapted to describe, a critical element of "Fire Safe, California" requiring evaluation. In addition, each of Kotter's steps has a counterpart in the CMM. For example, Kotter's Step 5 calls for "overcoming obstacles to change…both to empower others and to maintain the credibility of the change effort as a whole" (Kotter, 1995, p. 65). This describes not only a key challenge to the "Fire Safe, California" program, but it is also addresses the CMM's Task 4.1g, to "systematically assess resistance to change" and Task 3.4, "to develop and implement change enabling mechanisms" to overcome resistance to change.

After discussing Kotter's organizational transformation methodology with a number of the program's change leaders, the author concluded that it would serve as a very useful template for developing a performance evaluation methodology adapted to the needs of "Fire Safe, California." While the resultant methodology (Appendix C) borrows heavily from Kotter's work, it also has elements adapted from the other six models cited in Appendix A,

as well as techniques discussed by Hammer and Champy (1993).

This evaluation methodology proved very effective for addressing the final question posed by this research.

After five years, can it be determined which aspects of this change management effort are working well, and where improvements are needed?

Using the format outlined in Appendix C, a five-year performance evaluation of "Fire Safe, California" was conducted in discussions with the program's change leaders, including CDF Director Richard A. Wilson and State Fire Marshal Ronny J. Coleman. An effectiveness grading system, developed from the interviews, allowed for an informal comparative analysis of the various change factors (see "Discussion"). This also facilitated discussions regarding the program's relative merits, and provided guidance to the author for developing recommendations.

It should be noted that while the factors outlined in Appendix C are presented in an approximate sequential order, many of the activities occur simultaneously. For example, marketing the vision and communicating urgency can, and should, occur continuously.

The results of the performance evaluation suggest that this change management effort has been most successful in establishing effective prefire management pilot projects using GIS graphics technology and citizen participation. As a result, individual local communities have been empowered to take action for improving local fire safety, effectively implementing the program's vision. The program has also been successful in developing an unprecedented leadership coalition around the common vision of enhanced fire safety. This coalition transcends jurisdictional or single-interest perspectives, as demonstrated by the intergovernmental, public/private partnership approach that is getting stronger and more effective at overcoming obstacles as time goes by.

On the other hand, the program needs to do a better job of communicating outside the leadership coalition so that momentum can be generated to carry the program to a

more global level of awareness and credibility. The challenge now is to leverage the individual local successes into a statewide transformation of the wildfire protection system from a reactive to a proactive paradigm. It is in this area of “marketing the vision” that the most improvement is needed: unless and until the lessons learned from the “small-win” pilot projects are marketed effectively, institutionalizing the change effort will be difficult (see “Recommendations”).

DISCUSSION

The evaluation research conducted for this project allowed the development of a procedure for conducting a five-year performance evaluation of the “Fire Safe, California” program (see Appendix C). In the following discussion, the author presents a brief summary of the evaluation based on the interviews with change leaders, subsequent discussions with CDF executive management, and comparisons with descriptions from the change management literature.

FACTOR 1: COMMUNICATE THE URGENCY OF THE PROBLEM.

Implementing a transformational change is like trying to get an aircraft carrier to change course: it takes a tremendous amount of energy and the cooperation of many individuals. Without very strong motivation, people simply won’t pitch in and the effort will go nowhere. Duck (1993, p. 118) likens the magnitude of the task to “preparing the critical mass” in a nuclear reaction. As noted previously, Osborne and Gaebler (1992) observe that *crisis* is often the motivating force behind transformational change. This has certainly been true for “Fire Safe, California.” With billion-dollar megafires becoming more common (Santa Barbara in 1990, Oakland in 1991, Malibu and Laguna Hills in 1993, etc.), Californians have had no shortage of compelling news coverage in recent years to establish the urgency of the problem. “Fire Safe, California” has done a good job incorporating this material into its educational effort, though the public’s memory is short.

The program needs to find more effective ways of engaging citizens between disasters to keep the momentum for change.

PROGRAM EFFICIENCY GRADE: B-

FACTOR 2: FORM A POWERFUL LEADERSHIP COALITION.

The key word here is *coalition*. It took CDF a number of years to realize that a single organization could not effectively address a problem as huge and complex as the California wildfire problem. Fires burn with impunity across jurisdictions, and they affect much more than fire departments: they also affect homeowners, insurers, utility providers, and others. Until the need for a broad coalition of interests to address the problem was recognized, CDF and the other fire agencies were engaged in what one fire executive termed “a redundant wheel-spinning exercise.” With the formation of the California Fire Safe Council, and the local fire safe councils it has spawned, there are now productive outlets for the “critical mass” energy created by the sense of urgency. As this coalition has worked together over time, it has gained credibility and strength, and its effectiveness has increased.

PROGRAM EFFICIENCY GRADE: B

FACTOR 3: DEVELOP A COMPELLING VISION.

If the guiding coalition is to be successful, it must develop a picture of the future that is relatively easy to communicate and appeals to change leaders, stakeholders, and employees of the organizations expected to implement the change. The vision must be sensible and clear about where it is leading, or the transformation effort could easily devolve into a list of confusing and incompatible projects that take the coalition in the wrong direction, or nowhere at all.

The vision of “Fire Safe, California” is to reduce costs and potential losses from wildfire. This is accomplished through a proactive, public problem-solving process and GIS

graphics display technology to develop and implement prefire management projects to take action *before* fires occur. Each local fire safe council develops its own location-based vision of a fire safe future using the GIS graphics tools and large screen displays to view and manipulate spatial data on local fire history, hazardous fuel conditions, severe fire weather patterns, and values at risk. Wildfire risks and potential solutions are then assessed in these community settings, which is the essence of the California Prefire Initiative. In the pilot projects where this process has been tried, it has proven extremely effective in promoting local "ownership" and responsibility for determining how best to utilize the private and public resources of the statewide fire protection system to reduce costs and losses from wildfire.

PROGRAM EFFICIENCY GRADE: B

FACTOR 4: EMPOWER OTHERS TO ACT ON THE VISION.

A transformation of the magnitude envisioned for "Fire Safe, California" will be impossible unless thousands of people are willing to help, often to the point of making short-term sacrifices. These will include citizens, agency employees, business people, and law makers. But as Hammer and Champy (1993), Chang (1994), Kotter (1995), and others point out, few will make sacrifices, even if they are unhappy with the status quo, unless they believe useful change is possible.

According to CDF Director Richard A. Wilson (personal interview, December 11, 1997), "The most significant achievement of 'Fire Safe, California' has been the empowerment of communities to take action for improving local fire safety." The best evidence for this has been the formation of more than a dozen local fire safe councils statewide, and the successful pilot projects they have implemented (discussed below).

The consensus of the change leaders is that this change technique requires little modification, only expansion to as many new areas as budget constraints will allow.

PROGRAM EFFICIENCY GRADE: B+

FACTOR 5: IMPLEMENT SUCCESSFUL PILOT PROJECTS.

One of the dangers facing any long-term transformation effort is that once it becomes clear that major change will take a long time, urgency levels can drop. Political appointees come and go, and organizational commitment can wane. That is why it is essential to create "models to follow" (Osborne & Gaebler, 1992), or what Kotter (1995) calls "short-term wins" to help keep interest levels up and to force detailed analytical thinking that can clarify or fine-tune the vision.

This fine-tuning is being accomplished in "Fire Safe, California" through the incremental implementation of pilot projects. As an example of how effective they can be, citizens in rapidly-growing Riverside County recently worked with local fire officials to develop two prefire management projects. The result was a small investment of $5,000 for a prescribed burn and $700 for a fire safety inspection program. When one of California's most threatening wildfires of 1997 occurred in this same area under extreme weather conditions last August, firefighters were able to steer it into the previously burned area. The fire was contained at 7,100 acres and cost $1.4 million, and while this was one of the state's costliest fires of the year, no homes were lost. A post-fire analysis estimated that without the prefire management projects this fire almost certainly would have burned more than 60,000 acres, destroyed 50 homes, and caused more than $43 million in firefighting costs and citizen losses (Wright, 1997).

Recognition of the value of pilot projects implemented so far is what led the program's change leaders to give their highest effectiveness rating to this factor.

PROGRAM EFFICIENCY GRADE: A

FACTOR 6: DEVELOP MOMENTUM BY LEVERAGING SUCCESSES.

The long-term success or failure of a change depend on building a track record and maintaining momentum. The hard-earned credibility afforded by successful pilot projects must be used to tackle bigger and tougher problems. If, on the other hand, a perception is allowed to grow that the change effort isn't really up to the challenge of the major problems that have established the sense of urgency, then the powerful forces of tradition and resistance will reassert themselves.

"Fire Safe, California" is still a relatively young program, so it may be too early to accurately evaluate its long-term "staying power." There is little doubt among change leaders, however, that this is an area that needs increased attention.

PROGRAM EFFICIENCY GRADE: C

FACTOR 7: MARKET THE VISION.

Kotter (1995, p. 63) claims that one of the most common mistakes made in transformation efforts is "undercommunicating the vision by a factor of ten." Similarly, Hall et al. (1993) claim that "companies always underestimate the level of communication that must occur during implementation" of a change effort. This is especially true in the private sector where downsizing or restructuring may entail the loss of many jobs. But even where job loss may not be imminent, the vision must capture the hearts and minds of the troops to overcome the natural fear of abandoning the safety of tradition and the status quo.

Several change leaders noted that it has been easier to market the vision for "Fire Safe, California" to citizens and business interests than to firefighters. One of the most difficult challenges has been to overcome the skepticism and suspicion of entrenched fire service employees who fear that if prefire management is truly successful, fire suppression jobs will be lost. Recognition of this shortcoming led change leaders to give this factor the

poorest effectiveness rating.

PROGRAM EFFICIENCY GRADE: C-

FACTOR 8: INSTITUTIONALIZE NEW APPROACHES.

In the final analysis, transformational change sticks when it becomes “the way we do things around here.” In a few areas of California, particularly where initial pilot projects have demonstrated the new approach and proven it effective, the new prefire paradigm has taken root. But this is still the exception, and far from the rule. Institutionalizing this transformation will take years, perhaps decades. In the meantime, the program’s vision will have to survive changes in political administrations, economic fluctuations, evolving tax and fiscal policies, a growing population, changing land use patterns, and more.

PROGRAM EFFICIENCY GRADE: INCOMPLETE

RECOMMENDATIONS

Based on the five-year performance evaluation of the “Fire Safe, California” program, the author makes three recommendations. In the opinion of the author, these are the three most important “next step” strategies for institutionalizing this change effort.

Develop a marketing strategy that relates successful pilot project results to times of wildfire crisis.

The program’s greatest strength to date has been the success of using coalition leadership to implement the vision through relatively small-scale pilot projects. These constitute the type of “small wins” that Kotter (1995) claims are so important for advertising performance improvements and boosting the credibility of the overall change effort. They prove the new process structures can work, and they offer lessons for improving and expanding the process to cover more areas.

But in and of themselves, pilot projects do not constitute a program. The challenge is to use these local success stories to propel the momentum for a statewide fire safe vision. The surest way to accomplish this is to exploit times of crisis to “tell the story.” There is no better time to make a case for the prefire management transformation than when the attention of millions of California residents is riveted to live traffic copter video footage of the latest conflagration roaring across suburban hillsides. As melodramatic as this may sound, the fact is it has happened somewhere in California nearly every year since 1990. Developing a media strategy to take advantage of those inevitable windows of opportunity—to facilitate what State Fire Marshal Ronny J. Coleman calls “the catastrophic theory of reform”—would truly leverage “small wins” into major statements of vision. According to Chief Coleman (personal interview, September 22, 1997), many of the most significant developments in fire codes, for example, have not occurred incrementally, but in response to catastrophic events. An example of such a quantum change would be the almost universal adoption of codes affecting egress, emergency lighting, and use of combustible materials following the 1945 Cocoanut Grove Night Club fire in Boston that killed 492

people (Foote and Cole, 1993, p.57).

Communicating the urgency of the problem and marketing the fire safe vision are important at all times, but times of wildfire crisis must be more effectively exploited to market the vision. For a brief time, the commercial media is hungry to showcase ideas and solutions, especially ones utilizing the latest technology. To be ready to address this at times of wildfire crisis, a series of 15, 30, and 60-second video messages should be developed to take advantage of the "bully pulpit" of intense but fleeting media attention. These media feeds should use footage of successful prefire pilot projects to reassure an aroused public that "a solution is at hand, and you're part of it."

Develop a strategy for overcoming internal resistance to change.

Perhaps the biggest weakness of the program to date has been the uneven success at winning the hearts and minds of the fire service troops. For many of the same reasons identified by FEMA (1997) to explain the traditional resistance to fire prevention in the American fire service, California fire service personnel have been slow to enthusiastically embrace the transformation to prefire management. Reasons include a lack of tradition for doing prevention and a fear that effective prefire management equates with reduced job security. According to Schaenman et al. (1987), the most critical barrier to fire prevention efforts is the attitude of the fire service, starting with the self image of the firefighter. "Fire prevention is not what 99 percent of firefighters sign up for," they write. "It has not been part of the image of what a firefighter is, nor is it a heart-felt part of the job for the majority of the fire service today" (p. 22).

To counterract this perception, prefire management needs to be marketed internally as the future of the fire service, the "cutting edge." One key may be the growing applicability of computer technology: while computers will never put out fires, their technology can certainly be put to better advantage to ensure many of those fires need not happen in the first place (e.g., by using GIS and GPS to pre-plan). The biggest internal challenge of "Fire

Safe, California" may be to make the use of digital technology in effective public problem-solving forums a proud part of "what a firefighter is" in the 21st century.

Develop credible methods for quantifying improvements.

If the program is ultimately to become institutionalized, it must prove its worth, both internally and externally. There is no way to justify the expense and inconvenience of a major transformational change effort unless there is significant quality improvement that can be quantified in some way. According to Osborne and Gaebler (1992, p. 146), "What gets measured gets done." And documenting what gets done—that is, positive results—is the best insurance that the program will become "the way we do things around here."

But there is a vast difference between measuring efficiency and effectiveness. Efficiency is a measure of how much each unit of output costs, a relatively easy thing to measure for a business producing widgets. But what is the unit of output produced by a fire department? Effectiveness, on the other hand, is the measure of the quality of an output: how well did it achieve the desired outcome? Certainly, a desired outcome of the "Fire Safe, California" program is to reduce fire losses and costs, but the difficulty in evaluating these outcomes was recognized by one chief who asked, "How do you measure the value of a fire you prevented?"

Perhaps the best answer, again, is technology. By using the latest fire modeling techniques, it is possible to perform a "what-if" post-fire analysis to justify investments in strategic implementation of prefire management projects (see, for example, Wright, 1997). For these "what-if" analyses to be credible, however, fire managers must be extremely aggressive about identifying specific instances where prefire management efforts play a mitigating role, and then capturing relevant data (onsite weather readings, burning behavior, etc.) that can later be analyzed by computerized fire models. The challenge is that such data must be collected almost as the fire burns. But if this can be accomplished, then "what-if" scenarios depicting fire behavior that would likely have occurred in the

absence of prefire management can provide compelling evidence of firefighting costs and citizen losses averted. At some point such evidence will almost certainly become necessary to overcome resistance to the change effort, whether that resistance comes in the form of program naysayers or budgetary pressures.

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APPENDIX A

SUMMARY OF METHODOLOGIES FOR EVALUATING CHANGE

Eight factors supporting reinvention (Osborne and Gaebler, 1992):

Crisis.
1. Strong leadership
2. Continuity of leadership.
3. A healthy civic infrastructure.
4. Shared vision and goals.
5. Trust among change leaders.
6. Support from outside the organization
7. Models to follow.

Eight responsibilities for managing change (Duck, 1993):

Establish context for change and provide guidance.
8. Stimulate conversation about change effort across old boundaries.
9. Provide appropriate resources to implement the change.
10. Coordinate and align projects and communicate the larger picture.
11. Ensure congruence of messages, activities, policies, and behaviors.
12. Provide opportunities for joint creation.
13. Anticipate, identify, and address people problems.
14. Prepare the critical mass.

Five keys to a successful reengineering (Hall, et al.,1993):

Set an aggressive reengineering performance target.
15. Commit 20% to 50% of the chief executive's time to the project.
16. Conduct a comprehensisve review of customer needs, economic leverage points, and market trends.
17. Assign an additional senior executive to be responsible for implementation.
18. Conduct a comprehensive pilot of new design.

Eight steps to organizational change (Chang, 1994):

Diagnose the current situation from the customer's viewpoint.
19. Select the highest-priority process and then determine an approach.
20. Gain top-management commitment, involvement, and sponsorship.
21. Enlist the support and involvement of the information-systems department.
22. Assign a qualified facilitator or coach to the improvement team.
23. Conduct a thorough pilot of the improved process before moving on to full implementation.
24. Implement the improved process.
25. Recycle the lessons learned.

Ten Commandments for CEOs seeking organizational change (Reynierse, 1994):

Ensure the change process is strategy-driven.
26. Ensure the change process uses top-down involvement.
27. Make periodical organizational assessments before, during, and after the change process.
28. Ensure core values are clarified before undertaking the change process.
29. Ensure the change process includes workforce involvement and participation.
30. Employ inspirational leadership throughout the change process.
31. Communicate the change process throughout the orgganization.
32. Use a clear financial focus to guide and control the change process.
33. Use training to realize the desired change.
34. Use personal recognition programs to encourage behaviors that support the desired change.

Nine-item change management checklist (Troy, 1994):

Diagnose the situation.
35. Involve senior management in envisioning the desired state.
36. Identify core competencies.
37. Develop a corporate strategy and use it to focus change management process.
38. Use senior management to provide inspiration to the organization.
39. Establish role models for change management.
40. Communicate new direction and goals.
41. Establish change enabling devices and accountability systems.
42. Align recognition and award systems to reinforce the change.

Eight steps to organizational transformation (Kotter,1995):

Establish a sense of urgency
43. Form a powerful guiding coalition.
44. Create a vision.
45. Communicate the vision.
46. Empower others to act on the vision.
47. Plan for and create short-term wins.
48. Consolidate improvements and produce still more wins.
49. Institutionalize new approaches.

APPENDIX B

INTERVIEW OUTLINE

The initial goal of the “Fire Safe, California” program was “to reduce total costs and losses from wildland fires in California by protecting assets at risk through focused prefire management prescriptions and increasing initial attack success.” How would you evaluate the program’s performance against this goal for the following factors? Please rank them from 1 to 7, with 1 being the “most effective” and 7 “least effective.”

___ CHANGES HAVE BEEN INSTITUTIONALIZED

___ COMMUNICATION

___ COMPELLING VISION

___ EFFECTIVE PILOT PROJECTS

___ EMPOWERMENT OF OTHERS

___ LEADERSHIP

___ SENSE OF URGENCY

In the context of these 7 identified factors, what do you see as the program’s relative strengths and weaknesses?

Would you like to suggest any modifications to any of these 7 aspects of the program? To any other aspects of the program?

Now that we have discussed the “change effectiveness factors” being evaluated for “Fire Safe, California,” please assign each a letter grade using the scale below. (Note: you may assign the same letter grade to two or more factors, even if you rated one higher than the other(s).)

A = very effective

B = effective

C = needs improvement

D = ineffective; needs major overhaul

APPENDIX C

Overview of Performance Evaluation for "Fire Safe, California."

1. PROGRAM COMMUNICATES THE URGENCY OF THE PROBLEM. • Uses crisis as impetus to action. • Motivates aggressive cooperation.	B-
1. PROGRAM FORMS A POWERFUL GUIDING COALITION. • Assembles a group with enough power to lead the change effort. • Change leaders transcend jurisdictional perspectives.	B
1. PROGRAM DEVELOPS A COMPELLING VISION. • Vision is simple and easy to communicate. • Change leaders unanimously support desired outcomes.	B
1. PROGRAM EMPOWERS OTHER TO ACT ON THE VISION. • Overcomes obstacles to change. • Emphasizes local problem-solving and "ownership."	B+
1. PROGRAM IMPLEMENTS SUCCESSFUL PILOT PROJECTS. • Creates and recognizes visible "success stories." • Develops methods to measure performance and quantify improvements.	A
1. PROGRAM DEVELOPS MOMENTUM BY LEVERAGING SUCCESSES. • Uses increased credibility to change systems and policies that don't fit vision. • Invigorates the process with more challenging projects.	C
1. PROGRAM MARKETS THE VISION. • Guiding coalition sells changes to their individual constituencies (e.g, employees). • Implements a public relations strategy.	C-
1. PROGRAM INSTITUTIONALIZES NEW APPROACHES. • Recruits "tomorrow's leaders" into guiding coalition. • Rewards successes that are tied to new behaviors.	Inc.